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## A New Measure of Stereotypes in the Workplace

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## Working Paper Series

# A New Measure of Stereotypes in the Workplace

Working Paper 2020 - 02

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Lubomír Cingl

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1                   **A NEW MEASURE OF STEREOTYPES IN THE**  
2   **WORKPLACE\***

3  
4                   Stanislava Bajzíkova, Lubomír Cingl<sup>#</sup>

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5  
6   **Abstract**

7    We introduce a new measure of stereotypes based on the principle of a multiple-price  
8    list: the elicitation of willingness to have an ethnic minority member in a team. We  
9    apply it on an example of the Roma in the Czech Republic and test on a sample of 100  
10   students from the majority population. We also estimate the role of statistical  
11   discrimination, taste-based discrimination, and the contact hypothesis. Our results show  
12   small but significant mistreatment of the Roma. The choice to (not) have a Roma in a  
13   team seems to be driven by tastes, while the role of statistical discrimination and the  
14   contact hypothesis is rather limited.

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16  
17   **Keywords:** Stereotypes, Roma, discrimination, experiment

18   **JEL Classification:** C91, Z13

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# 1. Introduction

Understanding why and to what degree people discriminate against others based on observable characteristics like gender, age, and ethnicity is a central topic in economics, sociology and other social sciences. Discrimination in the labor market has been studied predominantly by using field experiments, such as correspondence tests (Bartoš, Bauer, Chytilová, & Matějka, 2016; Bertrand & Duflo, 2017; Bertrand & Mullainathan, 2004; Riach & Rich, 2002). Laboratory experiments have mostly been considered less suitable due to a strong experimenter demand effect, especially when the discriminative behavior is socially condemned, as is the case of ethnic discrimination. Laboratory studies of group discrimination are not uncommon, and they typically use standard economic games (dictator, trust, and ultimatum games, prisoner's dilemma) to uncover the roots of discriminative behavior in a certain context (see Lane (2016) for a meta-analysis; Neumark (2018)), but a direct measure of preference of a team-mate has so far been missing.

In this paper we present a novel laboratory measure of labor-market based stereotypes and apply it to measure the attitudes of the majority population towards the Roma, the largest minority in Europe and the most oppressed Czech minority. In the spirit of the field-experiment of Hedegaard & Tyran (2018), we set up a laboratory task to study ethnic prejudice in a workplace and the tendency to choose a partner depending on their ethnicity. In addition to measuring the presence and extent of discrimination, we track the potential channels underlying such behavior: statistical (Phelps, 1972) and taste-based discrimination (Becker, 1957). The subjects are also asked about their prior experience with Roma to check for the contact-hypothesis channel (Amir, 1969).

1 The Roma can be generally characterized by high rates of poverty and  
2 unemployment, low levels of education, and often the target of discrimination.  
3 Bartoš et al. (2016) show in a correspondence test that Roma applicants are  
4 only half as likely to be invited for a rental flat viewing or for a job interview  
5 than an applicant from the ethnic majority. The Roma ethnic group is typically  
6 thought to be marginalized due to the stereotypes of the majority in the domain  
7 of social-preferences (trust in particular), and are known for having highly  
8 present-biased time-preferences (Želinský, 2015), but stereotypes about their  
9 attitudes towards work may also play a role (team-work and effort under-  
10 provision; Barany, 2002).<sup>1</sup>

11 Our new measure is built on the principle of a multiple-price list (MPL), a  
12 method well known in the experimental economics literature (Andersen,  
13 Harrison, Lau, & Rutström, 2006). Participants repeatedly perform a simple  
14 effort task; first alone, then in a team with a randomly chosen anonymous  
15 partner, and before the third round they can indicate which of two potential  
16 partners they prefer to be teamed-up with for the subsequent round. The two  
17 anonymous partners differ only by ethnicity (Roma/non-Roma) which was  
18 communicated directly, while their other characteristics are the same. The  
19 choice of partner is carried out in an MPL fashion: there are 11 situations, from  
20 which one will be randomly selected for payment. In each of these situations,  
21 participants must decide whether they prefer a Roma or a non-Roma partner.  
22 They know they will never meet the partner in person. The situations differ in  
23 that one of the partners receives a performance bonus that ranges from 0 to +5,  
24 which is substantial considering the average productivity of subjects was 6.5

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<sup>1</sup> See section A1 in the Appendix for more details on the Roma minority.

1 tokens.

2 In particular, the effort task was designed to be equally demanding for any  
3 subject group and successfully completing it should not depend on cognitive  
4 skills, education attainment, or knowledge: cutting circular tokens pre-printed  
5 on paper with scissors inside a strict time limit. Subjects start with a practice  
6 round with no time limit and are informed that the upcoming paid-for rounds  
7 have a 5-minute time-limit. In the first round, subjects perform the task alone  
8 and are paid per-piece, which allows us to measure their baseline productivity.  
9 In the second round, subjects perform the task in a team of two and are paid  
10 equally for their total team production. In the third round they first indicate  
11 preferences for their partner in the MPL setting, perform the task, and when it  
12 is over, one of their partner choices is selected at random and implemented.

13 We also elicit subjects' beliefs about the productivity of the two potential  
14 team-members so that we can measure statistical discrimination and risk, social  
15 and time preferences. To elicit their risk preferences, subjects engage in an MPL  
16 where they choose between a lottery and a fixed payment in 10 different  
17 situations where the fixed payment is gradually increasing (Dohmen, Falk,  
18 Huffman, & Sunde, 2010). Their social preferences are measured using a simple  
19 dictator game (Kahneman, Knetsch, & Thaler, 1986) in which subjects are asked  
20 to divide 100 CZK between themselves and a Roma and a non-Roma team-  
21 member. We note that since the discriminative treatment is socially undesirable  
22 behavior, our direct approach may mask it (Norton, Vandello, & Darley, 2004).  
23 Therefore, we argue that if we find any occurrence of discrimination, it will  
24 constitute a lower bound.

25 Our results from an experiment with 100 university students show small but  
26 significant effects: (i) that Roma are expected to produce significantly smaller

1 output than non-Roma; (ii) Roma are less likely to be chosen as partners in the  
2 MPL setting; and (iii) the Roma receive slightly smaller transfers in the dictator  
3 game. When we explain the choices of the Roma partner in the regression  
4 analysis, the expected difference in the productivity between a Roma and non-  
5 Roma team-member correlates significantly negatively, which suggests an  
6 important role of statistical discrimination. However, when we add a variable  
7 indicating the difference between the transfers to Roma and non-Roma in the  
8 dictator game to account for taste-based discrimination, the statistical-  
9 discrimination term becomes insignificant, while the taste-based term retains its  
10 magnitude and levels of significance, even when we further control for risk-,  
11 time-preferences, age and general trust from survey. When we add personal  
12 experience to account for the contact hypothesis (even though we may introduce  
13 endogeneity bias), we again observe no difference in the main coefficients and  
14 the experience term comes out insignificant.

15 Our measure contributes to the literature and distinguishes from related  
16 studies in the following ways. First, in the study of Hedegaard & Tyran (2018),  
17 the choice of a partner could have been excused by the preference of a day of  
18 the second shift (e.g. Adam on Tuesday, Ahmed on Wednesday), while in our  
19 case, the choice is undoubtedly between the ethnicities. Furthermore, subjects  
20 would not meet in person, which implies we measure only preference of being  
21 with the person in a team without involving potential confounding factors  
22 connected with the physical interaction. More generally with respect to the field  
23 studies, we have a very specific situation that abstracts from any unobserved  
24 confounding effects. When compared to the related laboratory studies that  
25 typically employ the gift-exchange game, bargaining games, and/or vignette  
26 scenarios, we use a more real-world setting where subjects exert real effort,

1 interact with a real member of a minority that severely underperforms in the  
2 labor market outcomes, and subjects' decision is not hypothetical but rather  
3 payoff-relevant.

## 4 **2. Methodology**

5 The study was approved by the Internal Review Board of the Laboratory of  
6 Experimental Economics in Prague. The experiment is a two-stage procedure:  
7 the first stage is the full experiment conducted with students in the laboratory,  
8 while the second stage includes a lab-in-the-field experiment to collect the  
9 decisions of the “partners” in the team, the Roma and non-Roma subjects with  
10 similar characteristics. We focus first on the first stage. The second stage  
11 procedure with the Roma and non-Roma partners and was almost identical to  
12 the first stage.<sup>2</sup>

### 13 **Task**

14 The task was designed to be simple and equally demanding for any subject  
15 group, and not requiring educational attainment or previous knowledge. It  
16 consists of cutting circular shapes (tokens) out of templates pre-printed on  
17 sheets of paper inside a strict time limit of five minutes.

18 Subjects first performed a practice round, in which they practiced cutting 3  
19 tokens with no time limit, to become familiar with the quality assessment  
20 criteria. They were also told to plan the best strategy because in subsequent  
21 rounds they would be paid for the number of correct pieces produced under a  
22 strict time limit, under slightly varying payment regimes. They were informed  
23 that there would be more rounds but only one would be randomly selected at

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<sup>2</sup> For a better understanding of the whole experimental procedure, see the overview table A.1 in the Appendix and section A.2 for the detailed description of the stage 2.



1 the end of the experiment to be relevant for their payment. The quality of the  
2 produced tokens was carefully checked by the experimenters in every round.

### 3 **Procedure**

4 In round 1 (*individual performance scheme*) participants were given 5  
5 minutes to cut as many tokens as possible out of a template printed on paper.  
6 Each correctly produced token was rewarded with 10 CZK (app. 0.40 €).

7 In round 2 (*simple team performance scheme*) subjects were again given five  
8 minutes to cut as many pieces as possible. They were told they had been  
9 randomly paired with another anonymous participant who would participate in  
10 the second stage of the experiment later. Subjects were given basic  
11 characteristics of the partner: a male or female, 18 to 40 years, with at most  
12 secondary education, living in the Czech Republic, and that they would attend  
13 the experiment elsewhere than on the university premises. The payment scheme  
14 was such that partners and subjects would be paid for an equal share of the  
15 combined number of tokens produced, with one token again rewarded with 10  
16 CZK. Therefore, if one player produced one token, it would pay 5 CZK to them  
17 and 5 CZK to the other player. The partners also faced the 5-minute limit to  
18 cut out as many tokens as possible. To ensure everyone understood the new  
19 remuneration scheme, they were asked two control questions.<sup>3</sup>

20 After five minutes had elapsed and the production phase was over, we elicited  
21 the expectations of subjects about the average productivity in the group of  
22 partners. A correct answer was incentivized with an extra 10 CZK. Apart from  
23 the point estimate of the partner's productivity we elicited the expectations  
24 about the distribution of productivity in the other group. In order to simplify

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<sup>3</sup> See the Electronic Supplementary Material for the precise formulation of the two questions.

1 the question, subjects were asked to guess, if there were ten people in the group  
2 of partners, how many of them would fall into the following categories:  
3 producing fewer than 4 tokens, 5-8, 9-12, and 13+ tokens. A correct answer was  
4 again incentivized with 10 CZK.

### 5 **Choosing a partner**

6 Before the production phase in round 3, participants were asked to make  
7 eleven binary decisions about whether they prefer their partner for the upcoming  
8 production phase to be from group A (a Roma) or B (a non-Roma). Apart from  
9 the partner's ethnicity, they were informed that partners from both groups  
10 would share similar characteristics (as was described in round two).<sup>4</sup> Subjects  
11 were then informed that one of the eleven choice-pairs would be chosen at  
12 random and their decision made in this chosen choice-pair would be relevant for  
13 their payoff, if this round would have been selected at the end of the experiment.  
14 In the eleven situations we varied the size of the performance bonus that one of  
15 the two types of partner received (see Figure 1 below): from the Roma receiving  
16 the bonus +5 (top row) the bonus size was steadily decreasing by one token per  
17 each choice-pair over the situation when none of the two types received a bonus  
18 (row 6), to situations when the non-Roma received a +1 bonus, to the last  
19 situation when the non-Roma received +5 (bottom row).

---

<sup>4</sup> The experimenter informed participants orally that the researchers would do their best to identify the Roma and non-Roma participants so that they are as similar as possible, apart from their ethnicity. We decided to split the experiment into two stages because it was logistically impossible to invite the Roma and similar non-Roma into the laboratory as the Roma live mostly in other regions than Prague.

1

Figure 1: Multiple price lists choices

Participant A:	+ 5 clippings	O	O	Participant B:	+ 0 clippings
Participant A:	+ 4 clippings	O	O	Participant B:	+ 0 clippings
Participant A:	+ 3 clippings	O	O	Participant B:	+ 0 clippings
Participant A:	+ 2 clippings	O	O	Participant B:	+ 0 clippings
Participant A:	+ 1 clipping	O	O	Participant B:	+ 0 clippings
Participant A:	+ 0 clippings	O	O	Participant B:	+ 0 clippings
Participant A:	+ 0 clippings	O	O	Participant B:	+ 1 clipping
Participant A:	+ 0 clippings	O	O	Participant B:	+ 2 clippings
Participant A:	+ 0 clippings	O	O	Participant B:	+ 3 clippings
Participant A:	+ 0 clippings	O	O	Participant B:	+ 4 clippings
Participant A:	+ 0 clippings	O	O	Participant B:	+ 5 clippings

2

After the partner-selection phase, the 5-minute production phase followed.

3

We again applied the equal-share payment scheme for the combined production

4

in a team. After the production phase we elicited expectations about the average

5

productivity and distribution of productivity in each of the two groups. Each

6

correct answer was incentivized with 10 CZK. Because lower expected

7

productivity may be the main reason for avoiding a partner from a group, the

8

difference in expected productivity between the two groups is our proxy for

9

statistical discrimination.

10

### **Dictator game**

11

In round 4 we used a standard dictator game (Kahneman et al., 1986).

12

Subjects were given 100 CZK and were asked to divide this amount between

13

themselves and the partner who received 0 CZK. The partner had a passive role.

14

The choice was made on one screen for both types of partner (a Roma and a

15

non-Roma) simultaneously. Subjects were told that if this round were selected

16

for payment, one of the two partners would be selected at random.

17

### **Risk-preferences – incentivized elicitation**

18

Round 5 featured an MPL where subjects indicated their preference in ten

19

situations where each situation presented a choice between a safe amount paid

1 and an “all or nothing” lottery in which they had a 50% chance to win a larger  
2 amount (150 CZK) or to win nothing. The lottery option was held constant  
3 across all ten choice-pairs, while the safe amount was gradually increasing.

#### 4 **Questionnaire**

5 Before they received payment, participants filled in a short questionnaire  
6 that, among others, included a set of three question on their personal experiences  
7 with Roma people: (i) Would you say you have a lot of experience with the  
8 Roma minority? (ii) Do you personally know a member of Roma community?  
9 (iii) Do you encounter Roma seldom or rather frequently? The aim was to  
10 investigate the role of the contact hypothesis (Amir, 1969). Other questions  
11 included standardized questions on risk preferences, time preferences, and  
12 generalized trust.

13 The payment was determined by a randomly chosen round and then the  
14 respective individual choices of subjects. They were told that the decisions of  
15 the partners were yet to be collected. Once collected, subjects would be paid the  
16 full amount either by a bank transfer, or in cash upon another visit to the  
17 laboratory.

#### 18 **Sample**

19 The first stage was carried out in five experimental sessions on 100 university  
20 students in 2017. All were members of the majority ethnic population. The  
21 experiment was conducted at the Laboratory of Experimental Economics at the  
22 University of Economics in Prague. Most of our sample were economics  
23 undergraduates. The average age of participants was 22 (SD=1.8), 48 % were  
24 women, 98 % were Czech or Slovak, 24 % came originally from Prague, and all  
25 were proficient in Czech. The average time of one experimental session was 1.5

1 hours, but the experiment was combined with another one. To recruit  
2 participants, we used ORSEE (Greiner, 2015), and the experiment was  
3 programmed in z-Tree (Fischbacher, 2007). The average payment was 303 CZK  
4 per subject including a show-up fee of 150 CZK. The second stage followed  
5 several months after the first stage and included 44 non-Roma and 48 Roma  
6 subjects. The non-Roma subjects were selected to match the characteristics of  
7 the Roma subjects as much as the situation allowed.

### 3. Results

Table 1 presents the descriptive statistics of the main variables from Stage 1. The average productivity increased from 5.61 in round 1 to 6.78 in round 3. Figure A.1 in the Appendix shows the distribution of productivity with a notable variation across the three rounds.

Table 1: Descriptive statistics, Stage 1

Stage 1		Mean	SD	N
Round 1	Productivity	5.61	1.9	100
Round 2	Productivity	6.47	2.2	100
	Expectations	5.96	2.8	100
Round 3	Productivity	6.78	2.7	100
	Expectations - A (Roma)	5.69	2.6	100
	Expectations - B (non-Roma)	6.15	2.3	100
	Difference (B-A)	0.46	1	100
	Choices of Roma partner (of 11)	4.91	1.1	100
Round 4	Dictator - share to A (Roma)	14.87	18	100
	Dictator - share to B (non-Roma)	16.56	20	100
	Difference (B-A)	1.69	8.4	100
Round 5	Risk-preferences (lottery choices)	5.19	1.3	100
Questionnaire	A lot of experience with Roma	4.3	2	96
	Personally knows a Roma (yes=1)	0.55	0.5	96
	Encounter the Roma frequently	3.76	2.2	96
	Time-preferences	7.26	1.8	100
	Risk-preferences	5.33	1.8	100
	Trust	5.14	2.25	100

The expectations after round 3 clearly indicate a difference in the expected productivity of a Roma and a non-Roma partner of almost one half of a token in favor of a non-Roma ( $0.46, t = 4.51, p < 0.001$ ) which can be translated as being 7.5 % of the total expected productivity of a non-Roma.<sup>5</sup> The expectations of students in our sample are thus biased against the Roma, show a sign of

<sup>5</sup> A detailed look shows that 6 participants expected a higher productivity from the Roma group, 55 participants expected the same productivity, and 39 participants expected a higher productivity from the non-Roma group.

1 statistical discrimination, and are also in line with the common belief that the  
2 expectations of the majority population are negatively biased towards Roma.

3 Choosing a team partner in the MPL setting was the main task of our study.  
4 Participants chose partners in 11 different situations. The first 5 options favored  
5 a Roma, the last 5 options favored a non-Roma, and the middle one did not  
6 favor either. If participants do not discriminate against Roma, we should expect  
7 them to choose Roma partners on average 5.5 times. However, we find the  
8 average choice of Roma partners to be only 4.91, which is significantly less  
9 frequent ( $t = 42.17$ ;  $p < 0.001$ ). This points to the notion that participants  
10 differentiate between minority and majority groups and prefer a team with  
11 majority ethnic partners. When investigating the consistency of choices, we find  
12 only 3 inconsistent subjects who switch back and forth.

13 In the dictator game, participants split 100 CZK between themselves and a  
14 Roma partner, and another 100 between themselves and a non-Roma. The mean  
15 amount sent to Roma was 14.78 CZK and the average amount sent to non-  
16 Roma was 16.56 CZK. Again, we observe a small but significant difference  
17 ( $1.69, t = 2.01$ ;  $p = 0.047$ ). This result points to the existence of a taste-  
18 based discrimination.

19 In the next step, we explain the number of choices of a Roma partner using  
20 ordinary least squares regression with robust standard errors while controlling  
21 for their baseline productivity (Table 2). In column 1 we examine the influence  
22 of the difference in expected productivity (non-Roma - Roma,  
23 *Diff\_exp\_productivity*) which is our proxy for statistical discrimination. We  
24 observe that the coefficient is significant and negative, which we interpret as a  
25 sign of negative statistical discrimination in the preference for a team-partner.  
26 The size of its standardized coefficient informs us that one standard deviation

1 (SD) increase in a difference in productivity is associated with a 0.25 decrease  
2 in the preference for a Roma as a team partner. In column 2 we add the  
3 difference in the dictator game transfer (*DG\_diff*) as a proxy for taste-based  
4 discrimination, and its coefficient is significantly negative: if a person has 1 SD  
5 larger difference in transfer not favoring the Roma, it is associated with almost  
6 a 0.3 SD lower preference for a Roma in the team. Interestingly, the coefficient  
7 of the statistical-discrimination term decreases in magnitude and significance  
8 level.

9 When we add individual control variables (column 4), specifically the  
10 incentivized measure of risk preferences as the number of lottery choices out of  
11 10 (*Risk\_prefs*), non-incentivized time preferences, trust, and age, we observe  
12 that the statistical discrimination term further loses magnitude and significance,  
13 while the taste-based discrimination term remains the same. Interestingly, none  
14 of the control variables explains the dependent variable, except for age, which  
15 is significant and negative.

16 In the questionnaire at the end of the experiment we asked subjects about  
17 their personal experience with the Roma. Even though our sample consists of  
18 university students, they had widely diverse experiences with the Roma, as  
19 Figure A.2 in the Appendix presents. In column 4 we further add a dummy for  
20 knowing a Roma personally to control for the contact hypothesis which might  
21 introduce endogeneity bias in estimation. The coefficients of the main variables  
22 do not change in magnitude or significance after this addition. The coefficient  
23 of the dummy variable *Experience-personal* is not significantly different from  
24 zero, which suggests that in this selection of a team-partner personal experience



1 did not play a role.<sup>6</sup>

2 To sum up, the results reveal the larger relative importance of the taste-  
3 based discrimination term across the models. It remains significant even after  
4 the addition of multiple control variables, while the statistical discrimination  
5 term decreases in magnitude and ultimately loses significance completely. We  
6 are not sure what would have happened with a larger sample size as the loss of  
7 significance may be only due to small statistical power.

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<sup>6</sup> The remaining experience questions also did not play a significant role in the regression analysis, nor did a factor created out of the three questions using principal component analysis, as they were highly correlated. Results available in the Appendix Table A.3.

Table 2: Explaining choices of partner

	(1)	(2)	(3)	(4)
	No. of choices - Roma partner			
<i>Diff_exp_productivity</i>	-0.289** (-0.253)	-0.247* (-0.216)	-0.235 (-0.206)	-0.229 (-0.201)
<i>DG_diff</i>		-0.0413** (-0.298)	-0.0420** (-0.303)	-0.0415** (-0.297)
<i>Experience - personal</i>				-0.323 (-0.138)
CONTROLS	NO	NO	YES	YES
Constant	5.381***	5.471***	8.013***	8.211***
Observations	100	100	100	96
R-squared	0.070	0.157	0.206	0.221

2 *Note:* OLS. The dependent variable is the number of choices for a Roma partner in the MPL task.  
3 *Diff\_exp\_productivity* is the difference in the expected productivity between a Roma and non-  
4 Roma partners; *DG\_diff* is the difference in the transfer in the Dictator game between a Roma  
5 and a non-Roma partner; *Experience-personal* is dummy variable indicating if a person stated  
6 having personally known a Roma person. Controls include *R1\_productivity* is the number of  
7 produced tokens in round 1 of the task; *Time\_prefs* and *Trust* are survey measures of time-  
8 preferences and general trust, respectively; *Risk\_prefs* is the number of times choosing a lottery  
9 in the MPL task measuring risk-preferences; Robust normalized beta coefficients in parentheses.  
10 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Table A.2 in Appendix provides detailed results.

## 4. Concluding remarks

In this study we introduce a novel experimental approach using the multiple-price list idea that allows us to study a new dimension of discrimination in the laboratory: the preference for having a member of a minority (in our case the Roma, the largest European ethnic minority) as a team-partner in a real effort task with real payoff consequences. The real effort task was cutting circular shapes out of templates pre-printed on paper.

Our results suggest that Roma are discriminated against both statistically and due to tastes. Subjects expected Roma to produce less output than non-Roma by app. 0.5 piece (7.5 %), and they receive a smaller transfer in the dictator game. In the partner selection task, the Roma are less likely to be chosen as partners, mostly due to taste-based discrimination and not other potential reasons that include statistical discrimination, personal experience, individual risk preferences, time preferences and general trust.

Overall, we show evidence of the existence of small but significant taste-based discrimination in the laboratory using a university student sample and their choices of Roma as partners in a team in a real effort task. Previous research on ethnic discrimination (e.g. Charles & Guryan, 2008) shows that animus towards ethnic groups tends to be lower when subjects have higher education. Therefore, we argue that the observed effects likely constitute a lower bound of what would be found in a more representative sample of the population, or with a more realistic task setting, such as an actual workplace, or at least with partners being personally present. We also cannot rule out that in a more realistic setting, statistical discrimination and contact hypothesis will not start playing a significant role. Our exercise is merely showing a first

1 application of the new measure while delivering meaningful results.

2 Our results are in line with the findings of Hedegaard and Tyrann (2018).  
3 They conducted a natural field experiment in Denmark where they hired high-  
4 school students to prepare letters for mailing – a natural real job. Their  
5 experiment consisted of two rounds. In the first round, the students were paid  
6 based on their individual productivity level. In the second round, they worked  
7 in a team of two and were paid on a team-basis. Ethnic Danish participants  
8 were asked to select a partner from two candidates, one with a Muslim-sounding  
9 name and one with a Danish-sounding name, though the Danish-sounding  
10 person always had lower productivity than the Muslim, which allowed the  
11 researchers to calculate the indirect price of discrimination. The choice of  
12 partner in their experiment related to the day of the week when the work was  
13 to be done (e.g. on Monday with Ahmed or Tuesday with Adam). Our setting  
14 is even more direct – here the choice of a partner cannot be excused by a  
15 preference for the day of the week. Moreover, since in our setting the two  
16 workers never interact in person, our measure excludes the potential  
17 confounding factors connected with physical interaction.

18 Interestingly, we do not observe any effects of personal experience with the  
19 Roma, even though our sample shows variation. Our results therefore touch the  
20 literature on the contact hypothesis (Amir, 1969) which has been considered to  
21 be a controversial but hopeful intervention against ethnic stereotyping. Of  
22 course, our study did not manipulate the personal experience and merely looks  
23 at correlations, which suggest no role of experience in the selection of a partner  
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27

## 1        **Appendix**

### 2        **A1. The Roma ethnic group in the Czech Republic**

3        The Roma ethnic group is the largest minority living in Europe. According  
4        to statistics European Commission<sup>7</sup>, there are 10 to 12 million of Roma living  
5        in Europe and 6 million Roma living in the European Union. The Roma are  
6        distinguishable from the majority mainly by their unique culture, traditions and  
7        historical heritage, but also by labor market outcomes.

8        The Roma first came to the territory of central Europe at the turn of 12<sup>th</sup>  
9        and 13<sup>th</sup> century, living mostly on the periphery of the Hungarian Kingdom for  
10       several centuries (Horváthová 1964; Jurová 2002a; Matlovič 2005). Since the  
11       beginning of the 20<sup>th</sup> century, the Roma have faced repeated forced  
12       resettlements, open and official state discrimination, forced attempts to  
13       assimilate them into the majority populations, cultural and economic shocks  
14       connected to forced changes, and they were also one of the ethnic groups  
15       subjected to mass-murder during WWII. All these challenges have led to  
16       deepening Roma poverty which accelerated after 1989 (Jurová 2000; Matlovič  
17       2005; Kumanová et al. 2006; Matlovičová et al. 2012).

18       Today Roma mostly reside in Central and Eastern Europe. The Roma are  
19       non-territorially based, meaning that they do not have their own "home" state,  
20       but rather they are unequally dispersed across the states and regions of Europe.  
21       According to the estimates of the special representative of the Council of Europe  
22       secretary general for Roma issues, from 2012<sup>8</sup>, the largest numbers of the Roma  
23       in Europe are in Bulgaria (9,9% of the national population), Slovakia (9%),

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<sup>7</sup> *The social and economic integration of the Roma in Europe*. Brussels, 2010. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0133&from=EN>. Accessed on March 19, 2020.

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1 Romania (8,6%), and Hungary (7,5%). The Roma are a very diverse ethnic  
2 group, including distinct sub-ethnicities, sometimes differing even from  
3 settlement to settlement: e.g. the Vlašíka Roma (the nomadic Roma) or the  
4 Rumungri (the settled Roma; Jurová 2002).

5 The Roma in Europe face multiple ongoing socio-economic problems, from  
6 severe poverty, poor living conditions, housing, and health problems, to low  
7 education, high unemployment rates and poor labor market outcomes in  
8 general.<sup>9</sup> Many of them live in segregated communities and are socially excluded  
9 from society. The Roma often face severe discrimination and are stereotyped by  
10 the majority. Experimental evidence shows that the Roma in the Czech  
11 Republic are 2 times less likely to be employed or invited for a viewing of a  
12 rental flat (Bartoš et al. 2016). Overall, there seems to be a continuously  
13 deepening gap between the Roma and the majority.

14

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<sup>9</sup> Statistics on education and unemployment rate of the Roma in the Czech Republic are taken from UNDP Roma survey conducted in 2011. Documents available at: <http://fra.europa.eu/en/publication/2012/situation-roma-11-eu-member-states-survey-results-glance-0>. The unemployment rate of the Roma in the Czech Republic reached almost 38% in 2012, while the overall unemployment rate was 9.4%. Looking at the educational level, only 33% of the Czech Roma finish high school, compared to 84% of majority population. Furthermore, 41% of the Czech Roma reported having faced discrimination at workplace because their ethnicity.



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Table A.1. Overview of experimental design

1 <sup>st</sup> stage	2 <sup>nd</sup> stage
<p><b>Practice round</b></p> <p><b>1<sup>st</sup> round:</b></p> <ul style="list-style-type: none"> <li>• 5 minutes effort task</li> <li>• paid by personal productivity</li> </ul> <p><b>2<sup>nd</sup> round:</b></p> <ul style="list-style-type: none"> <li>• 5 minutes effort task</li> <li>• paired with another participant</li> <li>• paid by equal share</li> <li>• eliciting average productivity in another group</li> <li>• eliciting distribution of productivity in another group</li> </ul> <p><b>3<sup>rd</sup> round:</b></p> <ul style="list-style-type: none"> <li>• MPL</li> <li>• 5 minutes effort task</li> <li>• paired with another participant (different than in round 2), with either identity of Roma (group A) or non-Roma (group B)</li> <li>• paid by equal share</li> <li>• eliciting average productivity in another group</li> <li>• eliciting distribution of productivity in another group</li> </ul> <p><b>Further tasks:</b></p> <ul style="list-style-type: none"> <li>• Dictator Game – player A role</li> <li>• Risk preference elicitation</li> <li>• Questionnaire on experiences</li> </ul>	<p><b>Practice round</b></p> <p><b>1<sup>st</sup> round:</b></p> <ul style="list-style-type: none"> <li>• 5 minutes effort task</li> <li>• paid by personal productivity</li> </ul> <p><b>2<sup>nd</sup> round:</b></p> <ul style="list-style-type: none"> <li>• 5 minutes effort task</li> <li>• paired with another participant</li> <li>• paid by equal share</li> <li>• eliciting average productivity in another group</li> </ul> <p><b>3<sup>rd</sup> round:</b></p> <ul style="list-style-type: none"> <li>• 5 minutes effort task</li> <li>• paired with another participant (different than in round 2)</li> <li>• paid by equal share</li> <li>• eliciting average productivity in another group of participants</li> <li>• eliciting expectations of another group of participants, both for Roma and non-Roma</li> </ul> <p><b>Further tasks:</b></p> <ul style="list-style-type: none"> <li>• eliciting DG beliefs of 1<sup>st</sup> group of participants (both to Roma and non-Roma)</li> <li>• Risk preference elicitation</li> <li>• Questionnaire on patience and discrimination</li> </ul>

## 1        **A2. Stage 2 – detailed description**

2        The practice round and rounds 1 and 2 were the same as in stage one,  
3 including the elicitation of expectations. The only difference came in the third  
4 round, where no selection of partners occurred. Participants in this round were  
5 re-matched to a different “other participant” than in round 2 and performed the  
6 production phase. We then elicited the second order beliefs on the productivity  
7 expectations in the group of “other participants” – what the “other participants”  
8 expected the average productivity of Roma and non-Roma would be. Accurate  
9 answers were rewarded with 10 CZK.

10        Additional tasks included the incentivized elicitation of expectations about  
11 the behavior of the first movers in the dictator game (from the first stage), by  
12 asking how much subjects expected other participants had sent to Roma and to  
13 non-Roma participants out of the 100 CZK at hand.

14        The following activity was risk-preference elicitation designed after Gneezy  
15 & Potters (1997). Participants decided how much from an endowment of 50  
16 CZK to invest in a lottery with a 50% chance to win and triple the investment.  
17 We opted for a different task than in the first stage because it was easier to  
18 communicate than the MPL measure.

19        The last task of this stage was a short questionnaire which asked for personal  
20 information (age, sex, nationality, marital status, children, education, job), and  
21 standard questions on patience, risk behavior, experience with stereotypes  
22 concerning Roma work habits and whether the participants experienced any  
23 discrimination in the workplace.

1

Table A.2: Explaining choices of partner with focus on experience

	(1)	(2)	(3)	(4)
	No. of choices - Roma partner			
<i>R1_productivity</i>	-0.0603 (-0.0984)	-0.0673 (-0.110)	-0.0937* (-0.153)	-0.0889 (-0.147)
<i>Diff_exp_productivity</i>	-0.289** (-0.253)	-0.247* (-0.216)	-0.235 (-0.206)	-0.229 (-0.201)
<i>DG_diff</i>		-0.0413** (-0.298)	-0.0420** (-0.303)	-0.0415** (-0.297)
<i>Time_prefs</i>			0.0518 (0.0778)	0.0565 (0.0854)
<i>Trust</i>			0.0439 (0.0850)	0.0551 (0.108)
<i>Risk_prefs</i>			-0.170 (-0.186)	-0.152 (-0.163)
Age (years)			-0.0965* (-0.148)	-0.106* (-0.162)
<i>Experience - personal</i>				-0.323 (-0.138)
Constant	5.381***	5.471***	8.013***	8.211***
Observations	100	100	100	96
R-squared	0.070	0.157	0.206	0.221

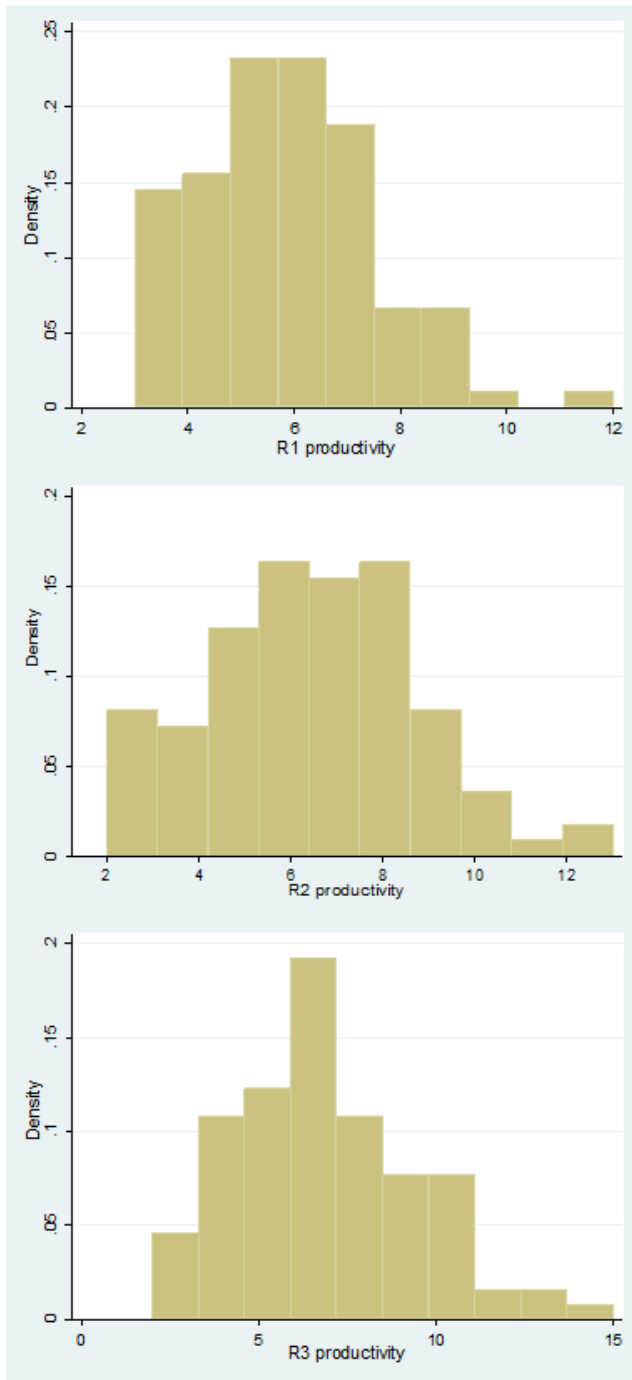
2 *Note:* OLS. The dependent variable is the number of choices for a Roma partner in the  
3 MPL task. *R1\_productivity* is the number of produced tokens in round 1 of the task;  
4 *Diff\_exp\_productivity* is the difference in the expected productivity between a Roma  
5 and non-Roma partners; *DG\_diff* is the difference in the transfer in the Dictator game  
6 between a Roma and a non-Roma partner; *Time\_prefs* and *Trust* are survey measures  
7 of time-preferences and general trust, respectively; *Risk\_prefs* is the number of times  
8 choosing a lottery in the MPL task measuring risk-preferences; *Experience-personal* is  
9 dummy variable indicating if a person stated having personally known a Roma person.  
10 Robust normalized beta coefficients in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

1

Table A.3: Explaining choices of partner with focus on experience

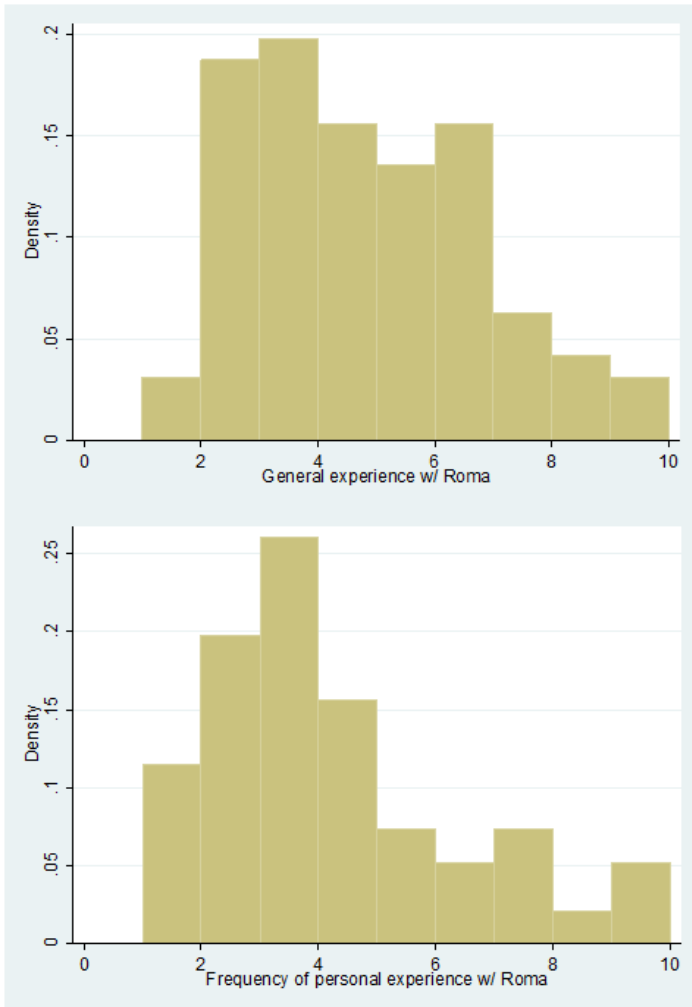
	(1)	(2)	(3)	(4)	(5)
<i>R1_productivity</i>	-0.0937*	-0.0930*	-0.0889	-0.0951*	-0.0951*
	(-0.153)	(-0.154)	(-0.147)	(-0.157)	(-0.157)
<i>Diff_exp_productivity</i>	-0.235	-0.254	-0.229	-0.246	-0.246
	(-0.206)	(-0.223)	(-0.201)	(-0.216)	(-0.216)
<i>DG_diff</i>	-0.0420**	-0.0405**	-0.0415**	-0.0406**	-0.0407**
	(-0.303)	(-0.290)	(-0.297)	(-0.290)	(-0.291)
<i>Time_prefs</i>	0.0518	0.0703	0.0565	0.0665	0.0658
	(0.0778)	(0.106)	(0.0854)	(0.101)	(0.0995)
<i>Trust</i>	0.0439	0.0434	0.0551	0.0449	0.0457
	(0.0850)	(0.0847)	(0.108)	(0.0877)	(0.0891)
<i>Risk_prefs</i>	-0.170	-0.170	-0.152	-0.164	-0.163
	(-0.186)	(-0.182)	(-0.163)	(-0.176)	(-0.174)
Age (years)	-0.0965*	-0.119**	-0.106*	-0.116*	-0.115**
	(-0.148)	(-0.182)	(-0.162)	(-0.177)	(-0.175)
<i>Experience - general</i>		0.0473			
		(0.0817)			
<i>Experience - personal</i>			-0.323		
			(-0.138)		
<i>Experience - frequency</i>				-0.00522	
				(-0.00987)	
<i>Experience - factor</i>					-0.0163
					(-0.0139)
Constant	8.013***	8.208***	8.211***	8.347***	8.294***
Observations	100	96	96	96	96
R-squared	0.206	0.209	0.221	0.203	0.203

2 Notes: OLS. Dependent variable - number of choices for a Roma partner. *R1\_productivity* is the  
3 number of produced tokens in round 1 of the task; *Diff\_exp\_productivity* is difference in expected  
4 productivity between a Roma and non-Roma partners; *DG\_diff* is the difference in the transfer  
5 in the Dictator game between a Roma and a non-Roma partner; *Time\_prefs* and *Trust* are survey  
6 measures of time-preferences and general trust, respectively; *Risk\_prefs* is the number of times  
7 choosing a lottery in the MPL task measuring risk-preferences; *Experience-general* is general  
8 reported experience with the Roma (1-no, 10-rich experience); *Experience-personal* is a dummy  
9 variable indicating if a person stated knowing personally a Roma person; *Experience-frequency*  
10 expresses how often the person gets in touch with Roma (1-almost never, 10-very often). Robust  
11 normalized beta coefficients in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.



1

2 Figure A.1: histogram of productivity, by rounds.



1  
2 Figure A.2: Histogram, experience questions